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ABSTRACT

This paper presents the findings of the last completed evaluation of a partial immersion program in St. Thomas, Ontario, which involves the use of French as the medium of instruction for half the school day and English for the other half, beginning in Grade One. Unlike the previous evaluation, in the current one a Canadian-normed instrument was used. As in the past, differences between the immersion and comparison groups at each grade level were analyzed through one-way analysis of variance as well as analysis of covariance using age and IQ as covariants. The results are specified and put in relation to previous findings in two ways: longitudinally, as they relate to data from previous evaluations for the same group at earlier grades, and where applicable, "replicationally," as they relate to data from previous evaluations for the same grade level. Findings are reported and interpreted for IQ scores, measures of English language skills, mathematical concepts and total mathematics scores, work-study skills, and the composite measure of skills tested, science achievement, and French performance. The results are generally positive with respect to the partial French immersion program. (AMH)

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Evaluation of a Bilingual Education Program in Canada: The Elgin Study Through Grade Six[1]

by H.C. Barik and M. Swain

With the increased emphasis on bilingualism in Canada in recent years, a number of innovative educational programs have been started which involve the use of the second language (characteristically, French) as the language of instruction for all or part of the curriculum. These programs have followed in the wake of the study initiated in St. Lambert, on the outskirts of Montreal in 1965 (see Lambert and Tucker 1972; Bruck, Lambert and Tucker 1974). In that project, English-speaking children attending an English school were taught entirely in French throughout Kindergarten and Grade 1, with English being introduced in limited amounts in Grade 2 and gradually increased in subsequent grades, until a relative balance of French and English instruction was reached. This "immersion" or home-school language switch approach has been adopted with slight modifications and at varying grade levels in a number of other localities (see Swain 1974), and the results of the evaluations have in general been encouraging (see, e.g., Barik and Swain 1976a; Edwards and Casserly 1976; Shapson and Kaufman 1976; Swain and Barik 1976a[2]).

An alternative approach to the total immersion formula is partial instruction in the second language. This paper presents the findings of the last completed evaluation (1975–76) of such a program currently in operation in St. Thomas, Ontario, which involves the use of French as the medium of instruction for half the school day and of English for the other half, beginning in Grade 1 (Previous evaluations of the program have been reported in Barik and Swain 1974, 1976b; Barik, Swain and Nwanunobi 1977). The evaluations have been carried out by the Bilingual Education Project of the Ontario Institute for Studies in Education as part of its investigation of innovative programs in second language instruction in Ontario.

The evaluation in Spring 1976 involved the first three streams of students to enrol in the program: Cohort I, which started the bilingual

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2 For yearly evaluations, see Barik and Swain 1975, 1976b, 1977; Swain and Barik 1976b).

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program in Grade 1 at its inception in 1970 and was therefore in Grade 6 during the 1975–76 academic year; Cohort II, which started the program in 1971 and was in Grade 5 in 1975–76, and Cohort III, which started the program in 1972 and was in Grade 4 during the present evaluation. The reader is referred to the previous reports for findings relative to these three cohorts at preceding grade levels[3].

In brief, the Elgin County bilingual program (referred to in previous reports as partial French immersion and abbreviated PFI) involves instruction in French for half the school day and in English for the other half. (Which language is assigned to morning or afternoon session varies across grades from year to year.) The program begins in Grade 1, following regular English (half day) Kindergarten. The subjects taught in French in Grades 1–3 are French Language Arts (with instruction in French reading and composition begun in the latter part of Grade 2 only), Mathematics, Music and Science (as of Grade 3), while English Language Arts, Physical Education and other subjects are taught in English. In Grades 4 and 5 for the groups considered in the present evaluation the subjects taught in French were French Language Arts, Mathematics, Science, Music and Physical Education, and those taught in English were English Language Arts (English, Spelling, Writing), Social Studies and Art. In Grade 6 the program was the same except that Physical Education was taught in English rather than in French. In 1975–76 the English and French components of the program were taught by two different teachers in Grades 4 and 5 (each teacher teaching both grade levels), while in Grade 6 the same teacher taught both components. All teachers had native or native-like command of the language or languages in question.

Previous Year's Findings. The previous year's (1974–75) findings relative to the three cohorts considered in the present report may be summarized as follows (Barik, Swain and Nwanunobi 1977):

In Grade 3, Cohort III PFI pupils scored equivalently to their regular English (RE) peers on a measure of mental ability. In all English language and mathematics skills tested, however, they scored significantly lower

3 A fourth cohort, which began the program in 1973, had also been tested in previous evaluations at the Grade 1 (Barik & Swain 1976a) and Grade 2 (Barik, Swain & Nwanunobi 1977) levels in order to check for trends in the data, since Cohorts I–III had not all been tested at those two grade levels. However, testing with the fourth cohort, which was in Grade 3 in 1975–76, was discontinued in the present evaluation since three successive sets of data had been obtained at that grade level with Cohorts I–III, as called for in the design of the Bilingual Education Project.

than RE pupils. In French, the PFI pupils scored adequately in listening comprehension and reading comprehension when placed in relation to pupils in a total French immersion (TFI) program, but did rather poorly on a measure of French achievement.

In Grade 4, Cohort II PFI pupils scored equivalently to their RE peers on the measure of mental ability as well as in English language skills, but scored significantly lower in computation and in total mathematics. In French, their level of performance on a measure of French achievement and in reading comprehension was generally adequate, but that in listening comprehension was below expectations when placed in relation to that of TFI pupils.

In Grade 5, Cohort I PFI pupils scored equivalently ot their RE peers with respect to all measures of mental ability, English language skills, and mathematics skills. In French, the performance level of PFI pupils in listening and reading comprehension as well as on a measure of French achievement appeared satisfactory when placed in relation to that of TFI pupils.

Present Evaluation (1975–76)

Sample. All pupils in Grades 4–6 of the PFI program were tested (one class at each grade level). As in previous evaluations, a comparison group from the regular English (RE) program was selected from a nearby, demographically similar school, which has supplied the comparison group throughout all evaluations.

The number of pupils involved in the testing program at each grade level was as follows[4]:

Grade	PFI Group	RE (Comparison) Group
4 (Cohort III)	19	18
5 (Cohort II)	15	18
6 (Cohort I)	18	19

4 These figures represent slight changes from those of the previous evaluation (Barik, Swain and Nwanunobi 1977) due to relocation of pupils or the occasional transfer of a PFI pupil to the RE program. (One pupil opted out of the PFI program from Grade 3 to Grade 4 and one from Grade 4 to Grade 5.)

Test Battery. A major change was introduced in the test battery utilized in the present evaluation relative to previous years. Whereas in the past the *Otis-Lennon Mental Ability Test* and the *Metropolitan Achievement Tests,* both U.S.-normed instruments, had been employed to obtain measures of mental ability (IQ) and of English language and mathematics skills (except for the IQ measure obtained in Grades 4 and 5 in 1974–75), in the present evaluation these two tests were replaced by Canadian-normed instruments. The tests administered were consequently as follows (all tests were administered in late Spring 1976 except for item f):

(a) *Canadian Cognitive Abilities Test, Nonverbal Battery.* This test (CCAT) was used to obtain an IQ measure (or "standard age score", as the equivalent measure is referred to in the test manual). Different levels of the test were employed at each grade level (Level B in Grade 4, Level C in Grade 5, Level D in Grade 6).

The Nonverbal Battery of the CCAT consists of three subtests: Figure Analogies, Figure Classification and Figure Synthesis. The test manual specifies that "the items in the subtests involve neither words nor numbers and the geometric or figural elements used bear little direct relationship to formal school instruction. The subtests emphasize discovery of and flexibility in manipulating relationships expressed in figure symbols or patterns. The Nonverbal Battery measures more nearly what has been called 'fluid intelligence', that is, ability that is not bound by formal school instruction."

(b) *Canadian Tests of Basic Skills.* This test battery (CTBS) provides for comprehensive and continuous measurement of growth in the fundamental skills: vocabulary, reading, the mechanics of writing, methods of study, and mathematics. There are five main tests in the battery, as follows: (1) *Vocabulary,* which requires the pupil to select the meaning of a word from four alternatives; (2) *Reading Comprehension,* which requires him to answer multiple-choice questions based on the contents of several passages; (3) *Language Skills,* which involves four sections: *spelling, capitalization, punctuation* and *usage.* The first three of these require the pupil to identify errors of the nature specified, while *usage* requires him to indicate the incorrect usage of words relative to the standards of correctly written English; (4) *Work-Study Skills,* which has three sections: *map reading* (ability to orient a map and determine direction, ability to locate and/or describe places on maps and globes, ability to determine distances and routes of travel, etc.), *reading graphs and tables* (ability to comprehend from the title the topic on which a graph or table gives information, ability to read amounts, determine relative rates or trends, etc.), and *knowledge and use of reference materials* (alphabetizing, use of

an index, use of the dictionary and similar materials); (5) *Mathematics Skills*, which has two sections: *mathematics concepts* (understanding the number system, mathematics terms and operations) and *mathematics problem solving* (application of mathematical concepts to practical problem situations).

The appropriate levels of the CTBS were employed (Level 10 in Grade 4, Level 11 in Grade 5, Level 12 in Grade 6). The scores on all subtests of the CTBS are expressed in terms of grade equivalents, and the scores of the five main tests are averaged to yield a composite score for the total test battery.

(c) *Metropolitan Science Test* (Intermediate). This test was administered to Grade 5 and 6 students only, and marked the first time that an academic subject area other than English/French and mathematics was tested. The test forms part of the *Metropolitan Achievement Tests* battery and consists of items relating to several science areas (life science, earth science, physical science, conservation and health). It is to be borne in mind that the test is in English, although PFI pupils are taught Science in French.

(d) *Story Completion Tests* (English and French). In the *Story Completion Test*, students were given a story written in English (approximately 280 words in length) in which the first and last sentences were left intact, while for the main body of the test, every 7th word was deleted. Students were required to fill in the blanks (Cloze procedure). Immersion students were also required to complete a story written in French. The stories were written by a specialist of children's literature, and were appropriate in content and style to the grade levels tested. Scores were obtained using the acceptable-response scoring procedure rather than the exact-response scoring procedure (see Swain, Lapkin & Barik 1976 for details).

This type of test has been demonstrated to have considerable validity as a measure of overall first language proficiency as well as overall second language proficiency (Oller & Conrad 1971; Swain, Lapkin & Barik 1976).

The English test was given to both PFI and RE pupils at all three grade levels, while the French test (employing a different passage than in English) was administered to PFI pupils only.

Three other tests of French performance were administered to PFI pupils only:

(e) *French Comprehension Test, Level 1.* This is a test of French aural comprehension employed, in one version or another, in previous evaluations. The Level 1 test is intended primarily for Grade 1 pupils in a total French immersion program. Lacking higher level tests, it was employed with all four PFI grades.

(f) *Test de Rendement en Français,* a test of achievement in French employed by the Commission des Ecoles Catholiques de Montréal and the Ministry of Education in Quebec with native French-speaking students[5]. PFI pupils in Grades 4–6 were administered the Grade 4 level test, and in addition Grade 5 and 6 pupils were also given the Grade 5 level test. The tests involve topics such as synonyms and antonyms, the rearrangement of words into a sentence, familiarity with alphabetical sequences, tenses, stylistics and other items, and were administered in late November to approximate the dates of administration of the test in Quebec and permit comparisons with test norms.

(g) *Test de Lecture,* a series of tests of reading comprehension in French developed by the Bilingual Education Project. The test at each grade level consists of a number of passages, each of which is followed by questions about its contents. Grade 4 PFI pupils were administered the Grade 3 and 4 level tests while Grade 5 and 6 PFI pupils were given the Grade 4 and Grade 5 level tests. Thus once again, Grade 4, 5 and 6 pupils had the Grade 4 level test in common.

The Grade 3 and 4 versions were very slightly revised from those employed in previous evaluations, while the Grade 5 test was developed for the present evaluation and was thus employed for the first time. Norms for these tests have not yet been developed.

As in past evaluations, the performance of PFI pupils in French (on the tests in items d–g above) is placed in relation to that of pupils from other localities in a total French immersion (TFI) program and, where feasible, of pupils in a RE program who receive instruction in French as a second language for short (20–40 minute) daily periods.

The testing was carried out by the consultants of the Elgin County Board of Education in the case of the English-administered tests and by a trained, fluently bilingual person in the case of the French tests.

Results

As in the past, differences between the immersion and comparison groups at each grade level were analyzed through one-way analysis of variance as well as analysis of covariance using age and IQ as covariates.

5 The cooperation of these two agencies is gratefully acknowledged. The test norms employed in the present evaluation are those provided by the CECM relative to pupils under their jurisdiction.

The results are specified and put in relation to previous findings in two ways: *longitudinally,* as they relate to data from previous evaluations for the *same cohort* at earlier grades, and, where applicable, *"replicationally",* as they relate to data from previous evaluations for the *same grade level.*

Grade 4 (Cohort III)

The data for Grade 4 are shown in Table 1. In relation to any one variable listed in the Table other than age and IQ, the analysis is based on the data of those pupils who have a score on that variable and also have measures on the two covariates (age and IQ), i.e., pupils participating in the analysis of covariance for that variable. This procedure explains the slight variation in the number of cases associated with the different variables (equal to the within-groups number of df's in the unadjusted means section of Table 1, plus two). In relation to age and IQ, the measures shown are those associated with the analysis of covariance of the one (or more) variable(s) that involved the most number of cases.

1. *Age.* There is no significant difference between the two groups in chronological age, corresponding to the findings for the same cohort in previous grades. Thus the slight changes in the composition of the two groups over the years does not result in any bias with respect to the chronological age of the pupils. The same findings are true with respect to Cohorts I and II (Tables 3 and 4), and will not be discussed further.

2. *IQ.* The PFI group obtains a significantly higher IQ measure than the RE group (113.9 vs 100.1; $p < .05$). *Longitudinally,* this finding differs from that of previous evaluations, where the two Cohort III groups did not differ with respect to IQ. There is no immediate explanation for the difference noted in Grade 4, and it is not possible to determine whether it is due, in whole or in part, to the change in the test battery employed, from the Otis-Lennon Mental Ability Test in Grades 1–3 to the *Canadian Cognitive Abilities Test* (CCAT) in Grade 4. *Replicationally,* the same change in test battery occurred also in previous evaluations with Cohort II from Grade 3 to Grade 4 and with Cohort I from Grade 4 to Grade 5 and did *not* result in changes in the trend of the IQ data from one year to the next. It is interesting to note, however, that a finding similar to the present one was recorded elsewhere where pupils in a TFI program who had not differed significantly in IQ from their RE peers throughout Grades K-3 scored significantly higher in Grade 4, where the test of

Table 1: Elgin Study 1975–1976: Unadjusted and Adjusted Means, Grade 4 (Cohort III)

	Unadjusted Means PFI Group	RE Group	F ratio	df	*Adjusted Means* (covs. = age + IQ) PFI Group	RE Group	F ratio	df
Age (mos., June '76)	118.92	118.94	0.00	1/27				
Cdn. Cog. Ab. T. (Stand. Age Sc. = IQ)	113.92	100.12	6.79*	1/27				
Cdn. T. Bas. Sk., Grade equivs.								
Eng. Skills:								
a) Vocab.	5.75	5.12	3.58	1/27	5.60	5.24	0.97	1/25
b) Read. comp.	5.27	5.13	0.20	1/27	5.13	5.25	0.14	1/25
c) Spelling	6.07	5.60	1.21	1/27	6.18	5.51	1.87	1/25
d) Capitalization	5.76	5.58	0.18	1/27	5.59	5.72	0.07	1/25
e) Punctuation	5.66	5.11	1.55	1/27	5.47	5.26	0.19	1/25
f) Usage	5.45	5.09	0.58	1/27	5.32	5.20	0.05	1/25
g) Lang. Tot. (c–f)[a]	5.73	5.26	1.43	1/27	5.62	5.35	0.35	1/25
Math. Skills:								
h) Concepts	5.24	5.33	0.07	1/27	4.96	5.55	2.71	1/25
i) Prob. Solv.	5.28	4.84	1.38	1/27	5.00	5.07	0.03	1/25
j) Maths. Tot. (h–i)[a]	5.28	5.12	0.22	1/27	5.00	5.35	1.10	1/25
Work Study Skills:								
k) Map read.	5.68	5.04	3.06	1/27	5.39	5.27	0.12	1/25
l) Graphs and Tables	5.48	5.03	1.44	1/27	5.26	5.21	0.01	1/25
m) Use ref. mat.	5.51	4.73	3.63	1/27	5.30	4.90	1.03	1/25
n) Wk. Study Tot. (k–m)[a]	5.55	4.94	3.60	1/27	5.32	5.13	0.36	1/25
o) *CTBS Comp. Sc.* (a, b, g, j, n)	5.51	5.11	1.72	1/27	5.32	5.26	0.03	1/25
Eng. Story Compl. T. (max. = 30)	23.77	23.87	0.00	1/26	23.01	24.53	0.89	1/24

* $p < .05$

a not exact average of subtest scores due to occasional missing subtest data

mental ability was likewise changed from the Otis-Lennon to the CCAT (Barik & Swain 1977).

It must be pointed out that the IQ data obtained in the present evaluation for the RE group are quite discrepant relative to previous evaluations. Whereas for the PFI group the score of 113.9 is consistent with that of 115.6 obtained the previous year in Grade 3 (Barik, Swain &

Nwanunobi 1977), the score of 100.1 for the RE group is considerably lower than that of 117.7 recorded the previous year. The change of tests does not seem to be a sufficient factor to account for such a difference, and it may be speculated that there were unrecorded problems in the administration of the test to the RE group (due possibly, e.g., to class disruptions, insufficient explanation of examples, etc.) It is of course not possible at this point to determine whether such was the case. It is felt, however, that the IQ score recorded for the RE group should be interpreted with caution. In support of this is the fact that an analysis limited to those pupils for whom both Grade 3 (from the previous year) and Grade 4 IQ scores are available shows Grade 3 scores of 119.4 for the PFI group and 116.8 for the RE group (no reliable difference), and end of Grade 4 scores of 113.9 and 97.9 for the two groups, respectively. The latter score (97.9) appears to be quite out of line with what might be expected[6].

In terms of (Canadian) norms for the CCAT, the total PFI Grade 4 group scores at about the 80th percentile and the RE group at the 50th percentile, though once again this is a questionable finding.

3. *English Language Skills.* Table 1 presents the results on the CTBS in terms of grade equivalent scores. As can be seen, there is no reliable difference between the two groups on any of the English language skills sections of the test (items a–g) on the basis of either unadjusted or adjusted scores. (The only near-significant finding is in relation to *vocabulary*, where the PFI group scores higher than the RE group, $p = .07$, on the basis of unadjusted scores.) The analysis of covariance using the Grade 4 IQ score as a covariate may be questionable, however, since doubts have been raised about the validity of the IQ scores for the RE group. Consequently the covariance analysis was also performed using the previous year's (i.e., Grade 3) IQ score as the covariate (together with age). When that is done (data not shown in Table 1; this second analysis involved somewhat different numbers of pupils than the one reported on in Table 1 since not all pupils with Grade 4 IQ scores also had Grade 3 IQ scores, and vice-versa), the PFI group is shown to score significantly higher ($p < .05$) than the RE group on *vocabulary* and *reading comprehension.*

Longitudinally, the findings on English language skills with Cohort III in Grade 4 are quite different from those with the same cohort the

6 Pupils going into the Elgin County PFI program have tended to be "brighter" pupils. The comparison groups have been selected so as to be equivalent with respect to scholastic aptitude. It thus seems incongruous to have them obtain such low IQ scores.

previous year in Grade 3, where the PFI group *lagged* behind the RE group on *all* English language sections of the test battery given at the time (*Metropolitan Achievement Tests;* MAT) on the basis of adjusted scores and all but one of the sections (spelling) on the basis of unadjusted scores (Barik, Swain & Nwanunobi 1977), but do accord with the findings of the same cohort in earlier evaluations (Grades 1 and 2; Barik & Swain 1974, 1976a), which showed no reliable differences between the two groups. If the change in tests (from the MAT to the CTBS) from Grade 3 to Grade 4 is not judged that relevant a factor (the two tests are quite comparable in the types of items included in the English language skills sections), it would thus appear that the PFI pupils in the course of Grade 4 have made up for the deficiencies which they showed in English language skills relative to the RE pupils at the end of Grade 3. *Replicationally,* the Grade 4 findings are consistent with those recorded in earlier evaluations with Cohorts I and II, which likewise showed no difference in English language skills at the end of Grade 4 between PFI and RE pupils on the basis of adjusted scores.

In terms of Canadian norms, as can be seen from Table 1, both Elgin PFI groups obtain (unadjusted) grade equivalent scores in the 5+ range and are thus performing at a grade level from a few to several months ahead of their grade placement at the time of testing (4.8–4.9).

In relation to English skills, it is also seen from Table 1 that there are no reliable differences between the two groups on the English *Story Completion Test,* which is taken as an index of overall linguistic proficiency.

4. *Mathematics Skills.* Table 1 shows there are no reliable differences between the two groups on the two mathematics sections or total mathematics score of the two groups, on the basis of either unadjusted or adjusted scores. (The same holds when the 1975 rather than the 1976 IQ score is employed as a covariate.) *Longitudinally,* this is again an improvement for the PFI group over its previous year's (Grade 3) performance, where it lagged behind the RE group on all mathematics measures. Thus, although PFI pupils continued to be taught mathematics in French in Grade 4, they were able to catch up to their RE peers in Grade 4. As in the case of English language skills, the situation in Grade 4 for Cohort III is again comparable to what it was in Grades 1 and 2, where no reliable difference was noted between PFI and RE pupils in mathematics skills. *Replicationally,* the present Grade 4 findings are similar to those recorded for Cohort I (Barik & Swain 1974), but not to those recorded for Cohort II (Barik & Swain 1976a), which showed the RE group ahead of the PFI group on some measures of mathematics.

The mathematics grade equivalent scores of both PFI and RE pupils again indicate a level of performance a few months ahead of their own grade placement, except in the case of the RE group in problem solving, where it scores at grade level 4.8, equivalent to its own grade placement at the time of testing.

5. *Work-Study Skills.* This is the first time that measures relating to study skills are obtained, through the use of the CTBS. As seen from Table 1, there is no significant difference between the two groups on any of the relevant sections (items k–m) on the basis of either unadjusted or adjusted scores (although with unadjusted scores there is a tendency, $p < .10$, for the PFI group to score higher on map reading, use of reference materials, and total study skills score). However, in the present case, which IQ measure is employed in the analysis of covariance is a significant factor. If the 1975 (Grade 3) IQ score is used as the covariate instead of the 1976 score (in view of the dubious validity of the latter), the findings relating to *use of reference materials* and *total study skills* score become statistically significant, in favour of the PFI group. (As stated previously, however, the analysis using the Grade 3 IQ score as a covariate is not based on exactly the same pupils as that which uses the Grade 4 score.) The data would thus seem to indicate that PFI pupils are ahead of their peers in the RE program with respect to some aspects of study skills. It may be speculated that these skills are enhanced in part in the PFI program through the greater need to consult reference books such as dictionaries.

The grade equivalent scores of the PFI pupils on the study skills sections fall in the 5.5 to 5.7 range (compared to a grade placement of 4.8), while those of the RE pupils are between 4.7 and 5.0, i.e., in general commensurate with their own grade level.

6. *CTBS Composite Score.* On the composite measure of basic skills, combining English language skills, mathematics skills and study skills, no reliable difference is found between the two groups, on the basis of either unadjusted or adjusted scores (and using either 1976 or 1975 IQ score in the latter case). The two groups are thus progressing equivalently in school-derived skills.

In terms of (unadjusted) grade equivalents, the PFI group on the composite score shows a level of performance (5.5) approximately seven months ahead of its grade placement, while the RE group (5.1) is three months ahead.

7. *French Performance.* The French scores obtained by PFI pupils at all three grade levels are shown in Table 2, together with comparative scores obtained at the same time (Spring 1976) from a total French immersion (TFI) program in Ottawa (Barik & Swain 1976b)[7].

In measure of aural French comprehension *(French Comprehension Test)*, the PFI pupils obtain a score of 30.3 out of 45. *Longitudinally*, the present score is slightly higher than that of 26.6 obtained by the PFI group in the same test the previous year in Grade 3. *Replicationally*, it is also slightly higher than the score of 27.3 obtained by the PFI group of Cohort II the previous year in Grade 4 (Barik, Swain & Nwanunobi 1976).

The test was not administered in other programs in the 1975–76 year. However, in relation to TFI programs, the Elgin score of 30.3 is slightly higher than the average score of 28.5 obtained by Grade 1 TFI pupils in the development of test norms (Barik 1976, p. 16). Relative to Grade 1 TFI norms for the test, the Elgin Grade 4 pupils score at the 56th percentile. Grade 1 TFI pupils, however, have had less contact time with French (a cumulative amount of 1–1/2 years, including half-year TFI Kindergarten) than Grade 4 PFI pupils (a cumulative amount of two years of contact time with French). The PFI score, however, is well above that of 12.7 recorded for pupils in a Grade 4 score French program (20 minutes of French in grades K-3 followed by 20–40 minutes of French in Grade 4; Barik 1976). Performance in French comprehension thus seems to be relatively adequate, as was the case the previous year in Grade 3.

On the Grade 4 test of French achievement *(Test de Rendement en Français)*, PFI pupils obtain a score of 13.4 out of 40. This represents a rather poor level of performance in relation to norms for Grade 4 native French speakers, placing them at the upper limits of the stanine 1 range (score range 0–14) and indicating a level of performance equivalent to that of the bottom 4 % of native French speakers. Grade 4 TFI pupils, in comparison, obtain a score of 23.4, which places them in the stanine 4 range. The findings of the previous evaluations have tended to show, however, that the corresponding grade level tests of the Test de

7 The TFI program considered operated up to Grade 5 only in 1975–76; consequently the three grade levels considered were Grades 3–5. The TFI classes considered had followed a 100 % French instruction program in kindergarten (half-day) and Grade 1. In Grade 2 the program was 100 % French in some cases and 80 % French – 20 % English in others; in Grade 3 80 % French – 20 % English, in Grade 4 80 % French – 20 % English in some cases and 75 % French – 25 % English in others; and in Grade 5 80 % French – 20 % English in some cases and 65 % French – 35 % English in others.

Table 2: Elgin Study 1975–1976: Performance in French, Grades 4–6

	Elgin PFI			Ottawa TFI[a]		
	Gr. 4	Gr. 5	Gr. 6	Gr. 3	Gr. 4	Gr. 5
French Comp. Test, Level 1 (max. = 45)	30.31	34.00	38.18			
Test de Rendement en Français Gr. 4 Level (max = 40)	13.44	20.11	24.67		23.39	
Gr. 5 Level (max. = 35)	---	11.45	15.63			17.06
Test de Lecture Gr. 3 Level (max. = 28)	16.50	---	---	20.19		
Gr. 4 Level (max. = 42)	15.50	25.50	26.12		25.16	
Gr. 5 Level (max. = 40)	---	10.30	15.19			19.24
French Story Compl. Test (max. = 31)	5.79	8.90	13.93	10.29	13.27	17.24

a Data taken from Barik and Swain, 1976b, Lapkin and Swain, 1977.

Rendement en Français series (i.e., Grade 3 level test in Grade 3, Grade 4 level test in Grade 4, etc.) are too difficult in relation to the PFI program, though they may be appropriate with TFI pupils. A similar observation has been made by Edwards, Doutriaux and McCarrey (1976). *Longitudinally*, the results are somewhat lower than the previous year, when Cohort III scored in the stanine 2 range on the Grade 3 test. *Replicationally*, the present findings duplicate those of the previous year with Cohort II in Grade 4, which also scored in the stanine 1 range.

On the Grade 3 level of the *Test de Lecture*, PFI pupils obtain a score of 16.5 out of 28. This score is somewhat lower than the score of 20.2 recorded for Grade 3 TFI pupils, who however, have had 1–1/2 more years of contact time with French. On the Grade 4 level test, however, PFI pupils, with a score of 15.5 out of 42, score considerably lower than Grade 4 TFI pupils (25.2), who however had at least twice as much cumulative contact time with French as PFI pupils. Since norms for the test have not been established, it is not possible to gauge this level of performance longitudinally relative to the performance of the same cohort the previous year in Grade 3. *Replicationally*, the present PFI scores are similar to those of the previous year's (Cohort II) Grade 4 results (scores of 15.7 and 16.8 recorded on the Grade 3 and Grade 4 tests respectively, scores of 15.1 and 15.5 with the present group). Given the differences in contact time with French between PFI and TFI pupils, the levels of performance in French reading comprehension recorded for the PFI group appear adequate. A further comparison may be made with data collected from a Francophone school located in a bilingual community in Ontario. Pupils in the school are from a French, or French-English background. The Grade 3 level of the Test de Lecture was given to one class of 18 Grade 3 pupils in this school, who obtained an average score of 19.0 out of 28 (vs 16.5 for Grade 4 PFI pupils), while one Grade 4 class of 26 pupils obtained a score of 19.0 out of 42 on the Grade 4 test (vs 15.5 for Grade 4 PFI pupils). In these comparisons also, therefore, PFI pupils seem to be performing adequately. However, these comparisons must be treated with caution because of differences in socioeconomic status and other sociocultural factors.

On the French *Story Completion Test*, Grade 4 PFI pupils obtain a score of 5.8 out of 31. This low score would seem to indicate that this type of test is too difficult for PFI pupils at that level. The Grade 3 TFI pupils (the lowest grade level tested in that program) obtain a score of 10.3 on the test; however, these pupils have had 1–1/2 more years of contact time with French. Data from Grade 3 Franco-Ontarian pupils are not available. (The test was given only to Grade 5 pupils in the Franco-Ontarian school.)

Table 3: Elgin Study 1975–1976: Unadjusted and Adjusted Means, Grade 5 (Cohort II)

	Unadjusted Means PFI Group	RE Group	F ratio	df	*Adjusted Means* (covs. = age + IQ) PFI Group	RE Group	F ratio	df
Age (mos., June '76)	131.33	132.13	0.16	1/25				
Cdn. Cog. Ab. T. (Stand. Age Sc. = IQ)	115.25	106.93	3.61	1/25				
Cdn. T. Bas. Sk., Grade equivs.								
Eng. Skills:								
a) Vocab.	6.62	6.44	1.12	1/25	6.61	6.45	0.70	1/23
b) Read. comp.	6.04	6.08	0.02	1/25	6.01	6.11	1.12	1/23
c) Spelling	6.89	7.00	0.21	1/24	6.97	6.93	0.02	1/22
d) Capitalization	6.66	6.86	0.36	1/24	6.70	6.82	0.11	1/22
e) Punctuation	6.96	6.86	0.15	1/24	6.98	6.84	0.22	1/22
f) Usage	6.96	6.06	10.74**	1/24	6.96	6.04	10.85**	1/22
g) Lang. Tot. (c–f)[a]	6.89	6.69	0.80	1/24	6.93	6.66	1.15	1/22
Math. Skills:								
h) Concepts	5.92	6.29	1.23	1/24	5.81	6.39	2.95	1/22
i) Prob. Solv.	6.08	5.94	0.19	1/24	5.93	6.07	0.25	1/22
j) Maths. Tot. (h–i)[a]	6.03	6.12	0.09	1/24	5.91	6.23	1.45	1/22
Work Study Skills:								
k) Map read.	6.71	6.24	1.87	1/24	6.59	6.34	0.50	1/22
l) Graphs and Tables	6.54	6.04	1.39	1/24	6.35	6.20	0.12	1/22
m) Use ref. mat.	6.20	5.62	3.72	1/24	6.18	5.64	2.66	1/22
n) Wk. Study Tot. (k–m)[a] .	6.49	5.97	4.75*	1/24	6.38	6.07	1.91	1/22
o) *CTBS Comp. Sc.* (a, b, g, j, n)	6.42	6.23	1.27	1/23	6.36	6.28	0.18	1/21
MAT Science T., Stand Sc. (range 55–109)	83.42	85.14	0.77	1/24	82.78	85.69	1.86	1/22
Eng. Story Compl. T. (max. = 30)	24.70	26.92	9.31**	1/21	24.39	27.16	15.69***	1/19

* $p < .05$ ** $p < .01$ *** $p = .001$

a not exact average of subtest scores due to occasional missing subtest data

Grade 5 (Cohort II)

The data for Grade 5 are shown in Table 3.

1. *IQ.* There is no reliable difference between the two Grade 5 groups in measured IQ, although there is a trend for the PFI group to score higher

than the RE group (115.2 vs 106.9, $p < .10$). The previous year in Grade 4, both groups obtained near identical IQ scores of 110.8 and 110.6, respectively (also on the CCAT), so that the present scores are up slightly for the PFI group and down sligthly for the RE group. In terms of test norms, the PFI group scores at the 83rd percentile and the RE group at the 67th percentile.

2. *English Language Skills.* Table 3 shows that the only reliable difference between the two groups in English language skills is in *usage*, where the PFI group scores significantly higher ($p < .01$) than the RE group on the basis of either unadjusted or adjusted scores. As can be seen, the grade equivalent scores for the two groups indicates a level of performance generally several months in advance (and in several instances up to a year or more) of their own grade level (5.8 at the time of testing).

Longitudinally, the present findings are close to those of the previous year in Grade 4, where on the basis of a different test (MAT) no reliable difference was found between the two Cohort II groups on any of the English language skills sections (although the PFI group tended to score *lower*, $p < .10$, on the language section which involved usage items). *Replicationally*, the findings are also similar to those of Cohort I in Grade 5, which showed no reliable differences between its two groups in English language skills.

On the English *Story Completion Test* (Table 3), however, there is a reliable difference between the two present Grade 5 groups in favour of pupils in the RE program, on the basis of either unadjusted ($p < .01$) or adjusted ($p = .001$) scores. These results, which are taken to be indicative of overall language proficiency, are difficult to interpret in view of the English language skills findings recorded on the CTBS. The issue will have to be monitored further in the future.

3. *Mathematics Skills.* Table 3 shows that there is no reliable difference between the two groups in mathematics skills (although there is a slight trend for the RE group to score higher than the PFI group on mathematics *concepts* on the basis of adjusted scores, $p = .10$). In terms of grade equivalents, both groups are performing at a level slightly in advance of their own grade level.

Longitudinally, the present findings represent an improvement for the PFI group, which the previous year in Grade 4 lagged behind the RE group in computation and total mathematics score, on the basis of a different test (MAT). *Replicationally*, the findings correspond to those recorded with Cohort I in Grade 5, where no reliable difference was found between the two groups in mathematics skills.

4. *Work-Study Skills.* There are no reliable differences between the two groups on any of the individual work-study skills sections of the CTBS – map reading, tables and graphs, use of reference materials (except for a trend in favour of the PFI group on the reference materials section when based on adjusted scores only, $p = .07$). When the total work-study skills score is considered, however, the PFI group scores significantly higher ($p < .05$) than the RE group on the basis of unadjusted scores[8], though the difference is no longer significant when scores are adjusted for age and IQ. In terms of grade equivalents, pupils in both groups (but particularly the PFI group) show a level of performance generally a few to several months in advance of their own grade level, except for the RE group in relation to the use of reference materials (5.6).

5. *CTBS Composite Score.* On the total CTBS battery, there is no reliable difference between the two Grade 5 groups, on the basis of either unadjusted or adjusted scores. Thus the two groups are showing an equivalent level of academic achievement. In terms of grade equivalents, the groups are 4–6 months in advance of their grade placement on the CTBS composite score.

6. *Science.* Table 3 shows that there is no reliable difference between the two Grade 5 groups on the *MAT Science* test, on the basis of either unadjusted or adjusted scores. Thus PFI pupils taught science in French do as well as their peers taught in English. Since the test was given in English, this finding implies that PFI pupils can apply scientific concepts acquired in one language to another language.

In terms of (American) test norms, PFI pupils score at the 54th percentile (with a grade equivalent score of 5.9) and RE pupils at the 62nd percentile (grade equivalent score of 6.2).

7. *French Performance.* The Grade 5 PFI group's score of 34.0 out of 45 on the French Comprehension Test (Table 2) is somewhat higher than that of 30.3 for the Grade 4 (Cohort II) group. *Longitudinally,* the Grade 5 score of 34.0 is an improvement over the score of 27.3 recorded by the same cohort the previous year in Grade 4. *Replicationally,* the present score is slightly lower than that of 36.3 obtained in Grade 5 with Cohort I. Comparisons with norms for the test are not very meaningful, since the test norms relate to the performance of Grade 1 TFI pupils (who have had

8 It is to be noted that the PFI group obtains higher grade equivalent scores on all three sections.

one year less of cumulative time in French instruction than Grade 5 PFI pupils). For the record, however, the Grade 5 PFI pupils score at the 79th percentile relative to Grade 1 TFI norms. The performance of the Cohort II PFI group in French listening comprehension had been rated below expectations in previous evaluations (Grade 2–4), when placed in relation to the performance of pupils in TFI and RE programs, taking amount of contact time with French into consideration. On the basis of the set of scores just presented, there seems to be an improvement on the level of French listening comprehension exhibited by the Cohort II group in Grade 5. (As an example, the score of 36.3 obtained by Cohort I the previous year in Grade 5 had been judged satisfactory. The score of 34.0 obtained by Cohort II is in the same score range.)

On the Grade 4 level of the *Test de Rendement en Français*, the Grade 5 PFI group obtains a score of 20.1 out of 40. This score is higher than that of 13.4 obtained by Grade 4 PFI pupils, and places them in the stanine 3 range in relation to test norms, indicating a level of performance equivalent to that of from 12 to 23 % of native French-speaking Grade 4 pupils. Grade 4 TFI pupils, in comparison, obtain a score of 23.4 (Table 2), placing them in the stanine 4 range; however, they have had considerably more cumulative contact time with French than Grade 5 PFI pupils ($4\frac{1}{2}$ years vs $2\frac{1}{2}$ years). The level of performance of the Grade 5 PFI pupils in measure of French achievement is thus judged satisfactory. *Longitudinally*, this conclusion is similar to that reached the previous year with the same cohort in Grade 4 (when they scored 13.9 on the same test). On the *Grade 5 level* of the Test de Rendement en Français, the PFI pupils obtain a score of 11.4 out of 35, which places them at the upper limit of the stanine 2 range (scores of 8–11) in relation to test norms, indicating a level of performance equivalent to that of from 5–11 % of native French-speaking Grade 5 pupils. Grade 5 TFI pupils, in comparison, with $2\frac{1}{2}$–3 more cumulative years of contact time with French, obtain a score of 17.1 (stanine 4).

On the Grade 4 level of the *Test de Lecture*, Grade 5 PFI pupils obtain a score of 25.5 out of 42, which is substantially higher than the score of 15.5 recorded by Grade 4 pupils in the same program. The Grade 5 PFI score is almost identical to that of 25.2 obtained by Grade 4 TFI pupils (Table 2), who have had about two more years of exposure time to French; thus the performance of the Grade 5 PFI pupils in French reading comprehension seems satisfactory, as was the case the previous year when they were in Grade 4. This statement is further reinforced by the comparison with the performance of the Grade 4 French-speaking pupils in the Franco-Ontarian school mentioned previously, who, as stated, obtained a score of 19.0 on the test. (However, this comparison must be

treated with caution.) *Replicationally,* the score of 25.5 obtained by Cohort II is somewhat higher than that of 22.4 obtained by Cohort I the previous year in Grade 5 on a very slightly different version of the test.

On the Grade 5 level of the *Test de Lecture,* Grade 5 PFI pupils obtain a score of 10.3 out of 40. This score is substantially lower than that of 19.2 obtained by Grade 5 TFI pupils, who, however, have had considerably more exposure to French. Grade 5 Franco-Ontarian pupils in the school specified previously (2 classes, 55 pupils), in comparison, obtained a score of 16.6.

On the French *Story Completion Test,* Grade 5 PFI pupils obtain a score of 8.9 out of 31, which is higher than the score of 5.8 obtained by Grade 4 PFI pupils. Their score is slightly lower than that of 10.3 for Grade 3 TFI pupils, who however have one more year of contact time with French than Grade 5 PFI pupils, and also, as might be expected, lower than the scores of Grade 4 (13.3) and Grade 5 (17.4) TFI pupils. (Franco-Ontarian Grade 5 pupils, in comparison, obtained a score of 18.3; Lapkin & Swain, 1977).

Grade 6 (Cohort I)

The data for Grade 6 are shown in Table 4.

1. *IQ.* There is no reliable difference in IQ between the two Grade 6 groups, who obtain identical scores of 111.8, placing them at the 77th percentile in relation to test norms. *Longitudinally,* the findings correspond to those obtained for the same cohort the previous year in Grade 5, where relatively similar IQ scores of 112.9 and 109.1 were obtained for the PFI and RE groups, respectively.

2. *English Language Skills.* Table 4 indicates that there are no reliable differences between the two Grade 6 groups on any of the English language skills sections of the CTBS, where both groups score several months (up to a year) in advance of their own grade placement of 6.8 at the time of testing. The findings are the same on the basis of either unadjusted or adjusted scores.

Longitudinally, the Grade 6 English language skills results correspond to those of the previous year in Grade 5, where no reliable differences were recorded between the two Cohort I groups on a different test (MAT).

Table 4: Elgin Study 1975–1976. Unadjusted and Adjusted Means, Grade 6 (Cohort I)

	Unadjusted Means				*Adjusted Means* (covs. = age + IQ)			
	PFI Group	RE Group	F ratio	df	PFI Group	RE Group	F ratio	df
Age (mos., June '76)	144.41	145.18	0.24	1/32				
Cdn. Cog. Ab. T. (Stand. Age Sc. = IQ)	111.76	111.76	0.00	1/32				
Cdn. T. Bas. Sk., Grade equivs.								
Eng. Skills:								
a) Vocab.	7.32	7.56	0.46	1/32	7.30	7.58	0.64	1/30
b) Read. comp.	7.44	7.36	0.05	1/32	7.43	7.37	0.04	1/30
c) Spelling	7.94	7.82	0.10	1/32	7.94	7.82	0.11	1/30
d) Capitalization	7.75	7.61	0.11	1/32	7.77	7.59	0.25	1/30
e) Punctuation	7.11	7.31	0.18	1/32	7.13	7.29	0.11	1/30
f) Usage	7.44	7.28	0.23	1/32	7.44	7.27	0.27	1/30
g) Lang. Tot. (c–f)[a]	7.57	7.51	0.04	1/32	7.58	7.49	0.08	1/30
Math. Skills:								
h) Concepts	7.15	8.09	7.97**	1/31	7.16	8.08	11.61**	1/29
i) Prob. Solv.	6.97	7.29	0.74	1/31	6.97	7.29	0.92	1/29
j) Maths. Tot. (h–i)[a]	7.07	7.71	3.59	1/31	7.08	7.71	5.11*	1/29
Work Study Skills:								
k) Map read.	7.07	7.11	0.15	1/30	7.04	7.14	0.08	1/28
l) Graphs and Tables	7.16	6.99	0.10	1/30	7.11	7.04	0.02	1/28
m) Use ref. mat.	7.51	6.91	2.28	1/30	7.49	6.94	1.98	1/28
n) Wk. Study Tot. (k–m)[a]	7.21	7.00	0.32	1/30	7.18	7.04	0.18	1/28
o) *CTBS Comp. Sc.* (a, b, g, j, n)	7.33	7.39	0.04	1/30	7.30	7.43	0.22	1/28
MAT Science T., Stand. Sc. (range 55–109)	84.59	91.88	5.91*	1/32	84.49	91.98	7.50**	1/30
Eng. Story Compl. T. (max. = 30)	24.93	26.75	0.95	1/29	24.76	26.92	1.37	1/27

* $p < .05$ ** $p < .01$

a not exact average of subtest scores due to occasional missing subtest data

The present findings are reinforced by the results on the English *Story Completion Test* (Table 2), which likewise reveal no reliable differences between the two groups.

3. *Mathematics Skills.* Table 4 indicates that there is a reliable difference in favour of the RE group on the mathematics *concepts* section on the basis of either unadjusted or adjusted scores ($p < .01$), and also on the *total*

mathematics score ($p < .05$) when scores are adjusted for age and IQ. (A similar trend is noted, $p = .07$ on the basis of unadjusted scores.) In terms of grade equivalents, the PFI group is scoring slightly above its own grade level, while the RE group shows a more substantial advance.

Longitudinally, the present findings differ from those of the previous year for the same cohort in Grade 5, where no reliable difference in mathematics was noted between the two groups (on the basis of the MAT). This also marks the first time that a significant difference in mathematics arises between the two Cohort I groups since the initial program evaluation (in 1972–73, when the Cohort I groups were in Grade 3). Since the significant differences noted in the present analysis are a function primarily of the mathematics *concepts* section of the CTBS, the possibility exists that part of the reason for the PFI group's lag relative to the RE group (even though the PFI group still performs at a grade equivalent level above its own grade level) is due to unfamiliarity with mathematical concepts expressed in English or greater time required to understand mathematical concepts expressed in English, since they are taught the subject in French, rather than with unfamiliarity with the concepts as such[9]. The present mathematics findings bear watching in the future.

4. *Work-Study Skills.* Table 4 indicates that there are no reliable differences between the two groups on any of the work-study skills sections or total work-study skills score. Both groups are performing at a level slightly ahead of their own grade level.

5. *CTBS Composite Score.* On the overall measure of academic achievement derived from the CTBS, no difference is noted between the two groups. Thus, in general, PFI pupils are performing equivalently to their RE peers on the spectrum of English language, mathematics and work-study skills taught in school.

6. *Science.* There is a reliable difference between the two groups on the MAT Science test, in favour of the RE group, whether on the basis of unadjusted scores ($p < .05$) or adjusted scores ($p = .01$). On the basis of (American) test norms, the PFI group scores at the 40th percentile and

9 It is recognized, however, that this suggestion is weakened by the fact that similar findings did not occur in Grades 4 and 5 (Tables 1 and 3), although it may be that some of the mathematics concepts encountered in the Grade 6 level of the test are more difficult to comprehend in English than those found in the lower grade level tests. A detailed item analysis might be instructive.

has a grade equivalent score of 6.1, while the RE group scores at the 68th percentile and has a grade equivalent score of 7.6. Here, then, the PFI group seems to be encountering some difficulty, since its level of performance is several months behind its own grade level of 6.8 and, it may be noted, just two months ahead of the grade equivalent score of 5.9 obtained by the Grade 5 (Cohort II) PFI group. Since science was not tested previously, it is not possible to determine whether the difficulties encountered by PFI pupils arose in Grade 6 or whether they are a carry-over from previous grades.

Part of the difficulty with the science test for PFI pupils, once again, may be at the vocabulary level – unfamiliarity with science concepts expressed in English – rather than at the concept level itself.

7. *French Performance.* On the *French Comprehension Test,* Grade 6 PFI pupils obtain a score of 38.2 out of 45 (Table 2), which, as expected, is higher than the scores obtained by Grade 4 and 5 PFI pupils. *Longitudinally,* the Grade 6 score is only slightly higher than the score of 36.3 which the same cohort obtained the previous year in Grade 5; however, with scores nearing the maximum score of 45, a "ceiling" effect comes into play[10]. Level of performance in French listening comprehension thus appears to be satisfactory, as it has been with Cohort I in previous evaluations.

On the Grade 4 level of the *Test de Rendement en Français,* Grade 6 PFI pupils obtain a score of 24.7 out of 40 (Table 2), higher than the score of 23.4 obtained by Grade 4 pupils in a TFI program, who have had a greater cumulative amount of contact time with French (approximately 4 years, when time associated with English Language Arts instruction is excluded, vs 3 years for Grade 6 PFI pupils). In terms of test norms, PFI pupils score in the stanine 4 range, doing as well as from 24 to 40 % of French-speaking Grade 4 pupils. On the Grade 5 level of the test, Grade 6 PFI pupils obtain a score of 15.6 out of 35. This score is slightly lower than the score of 17.1 obtained by Grade 5 TFI pupils, who have had approximately $1\frac{1}{2}$ more years of cumulative contact time with French.

10 In relation to test norms for Grade 1 TFI pupils, Grade 6 PFI pupils score at the 95th percentile. However, this comparison is not very meaningful since Grade 6 PFI pupils have had a cumulative amount of three years of contact time with French, or twice the amount for Grade 1 TFI pupils; in addition, there is an obvious maturational difference between the two groups, which may play a part on test results. (The maturation factor is also applicable to all other comparisons which relate the performance of one group to that of pupils of another grade level.)

The score also falls in the stanine 4 range relative to test norms for Grade 5 French-speaking pupils. The level of performance of French achievement recorded for Grade 6 PFI pupils on the two levels of the Test de Rendement administered thus appears satisfactory, when placed in relation to data from TFI pupils and taking amount of contact time with French into consideration. This finding is consistent with previous evaluations of Cohort I's performance.

In French reading comprehension, Grade 6 PFI pupils obtain a score of 26.1 out of 42 on the Grade 4 level of the *Test de Lecture* and of 15.2 out of 40 on the Grade 5 level (Table 2). These scores are higher than those of PFI pupils from lower grade levels taking the same test (though only marginally so on the Grade 4 test relative to Grade 5 PFI pupils, who obtain a score of 25.5)[11]. On the Grade 4 test, the Grade 6 PFI pupils do as well as Grade 4 TFI pupils, who obtain a score of 25.2, while on the Grade 5 test the PFI pupils score lower than Grade 5 TFI pupils, who obtain a score of 19.2. Taking into account the different amounts of contact time with French associated with the two programs, the level of performance of the Grade 6 PFI pupils in French reading comprehension appears satisfactory, as was the case in previous evaluations. (The Grade 6 PFI scores also measure well against the score of 19.0 and 16.6 obtained by Grade 4 and 5 Franco-Ontarian pupils on their respective grade level tests, as discussed previously.)

On the French *Story Completion Test,* Grade 6 PFI pupils obtain a score of 13.9 out of 31 (Table 2), which is higher than the scores obtained by pupils in the same program in Grades 4 (5.8) and 5 (8.9). The Grade 6 PFI score is higher than the score of 10.3 obtained by Grade 3 TFI pupils, who have had slightly more contact time with French. (The maturation factor, cf footnote 10, may be of some significance in this comparison, however, since this type of test is conceptually more difficult for younger pupils.) The Grade 6 PFI score corresponds approximately to that of 13.3 obtained by Grade 4 TFI pupils, and is lower than that of 17.4 obtained by Grade 5 pupils. Level of performance of Grade 6 PFI pupils on the test thus again appears to be satisfactory when placed in relation to that of TFI pupils, taking differences in amount of contact time with French into consideration[12].

11 The score of the Grade 6 pupils, however, is higher than their own score of 22.4 on the same level test the previous year in Grade 5.

12 The Grade 5 Franco-Ontarian pupils mentioned previously were also administered the French story completion test. They obtained a score of 18.3. The test was in addition administered to one class (26 pupils) of monolingual French-speaking pupils in the Province of Quebec; these pupils obtained a score of 22.5. (See Lapkin & Swain 1977).

Summary

The findings of the 1975–76 evaluation of the PFI program in operation at Wellington Street Public School in St. Thomas, Ontario, relative to Grades 4, 5 and 6 (basing the findings on adjusted scores) may be summarized as follows:

1. In Grade 4 (Cohort III):

(a) Pupils in the PFI program have a significantly higher IQ score than pupils in the RE program (in a comparable school). This marks the first time that such a difference is noted between the two groups of Cohort III. However, the unexpectedly low IQ score of the RE group, relative to previous measures obtained with it, make this particular finding suspect.

(b) There are no reliable differences between the two groups in English language skills (except in vocabulary and reading comprehension in favour of the PFI group if the analysis is performed on the basis of the data of pupils with a previous year's – i.e., Grade 3 – IQ score rather than a Grade 4 IQ score). These findings indicate an improvement on the part of PFI pupils, who the previous year in Grade 3 lagged behind RE program pupils on all English language skills tested.

(c) There are no reliable differences between the two groups on any of the mathematics measures, again in contrast with the previous year when the PFI group was behind on all mathematical skills measured.

(d) There are no reliable differences between the two groups on measures of work-study skills. (However, differences do appear in favour of the PFI group on use of reference materials and total work-study skills score if the analysis makes use of the Grade 3 rather than the Grade 4 IQ score as the covariate.)

(e) The composite measure of skills tested – English language skills (vocabulary, reading comprehension, language), mathematics skills and work study skills – does not reveal any reliable difference between the two groups.

(f) In measures of French performance, PFI pupils score adequately in French listening comprehension and French reading comprehension when their performance is placed in relation to that of pupils in a TFI program and, where applicable, pupils in a RE program who receive instruction in French as a second language, when amount of contact time with French is taken into consideration. Performance on a measure of French achievement appears somewhat low.

2. In Grade 5 (Cohort II):

(a) No reliable difference is noted between the two groups in IQ measure, a finding consistent with previous Cohort II results.

(b) There are no reliable differences in English language skills measured by the CTBS except for usage, where PFI pupils score significantly higher than RE pupils. These findings are generally consistent with those of the previous year for the same cohort, which revealed no reliable differences in English language skills between the two groups. However, on a story completion test which provides an overall measure of language competence, PFI pupils score significantly lower than RE pupils.

(c) There are no reliable differences between the two groups in mathematical skills, in contrast to the previous year when the PFI group scored significantly lower than the RE group in computation and total mathematics score.

(d) The PFI group scores significantly higher than the RE group on an overall measure of work-study skills.

(e) The two groups perform equivalently on the composite measure of skills tested.

(f) There is no reliable difference between the two groups on a measure of science achievement.

(g) In French performance, Grade 5 PFI pupils appear to be doing satisfactorily in measures of French listening and reading comprehension as well as French achievement, when placed in relation to TFI pupils.

3. In Grade 6 (Cohort I):

(a) No difference is noted between the two groups in measured IQ, a finding consistent with previous Cohort I results.

(b) There are no reliable differences between the two groups in English language skills, which is also consistent with previous findings.

(c) The PFI group scores significantly lower than the RE group in mathematics concepts and total mathematics score, in contrast to previous Cohort I results which showed no reliable difference between the two groups in mathematics skills.

(d) There are no reliable differences between the two groups in work-study skills.

(e) No difference is noted on the composite measure of skills tested.

(f) PFI pupils score significantly lower than RE pupils on a measure of science achievement.

(g) In French performance, PFI pupils score satisfactorily on all measures considered – listening comprehension, reading comprehension, French achievement – when placed in relation to TFI pupils.

The results of the evaluation are generally positive with respect to the PFI program. For Cohorts II and III, they reveal some amelioration in either English language skills or mathematics or both over the findings for the previous year, while measures of French performance are found to be adequate (except on the story completion test). The one grade level where problems may be occurring is Grade 6 (Cohort I), which shows the PFI group behind in mathematics and science. As suggested, these findings may be a question of vocabulary – unfamiliarity with or greater difficulty in understanding such material in written English since it is taught to PFI pupils in French – rather than being attributable to a lack of mastery of the subject matter. These "problems areas" will have to be monitored in the future.

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